

The Iariatsoft Event Display



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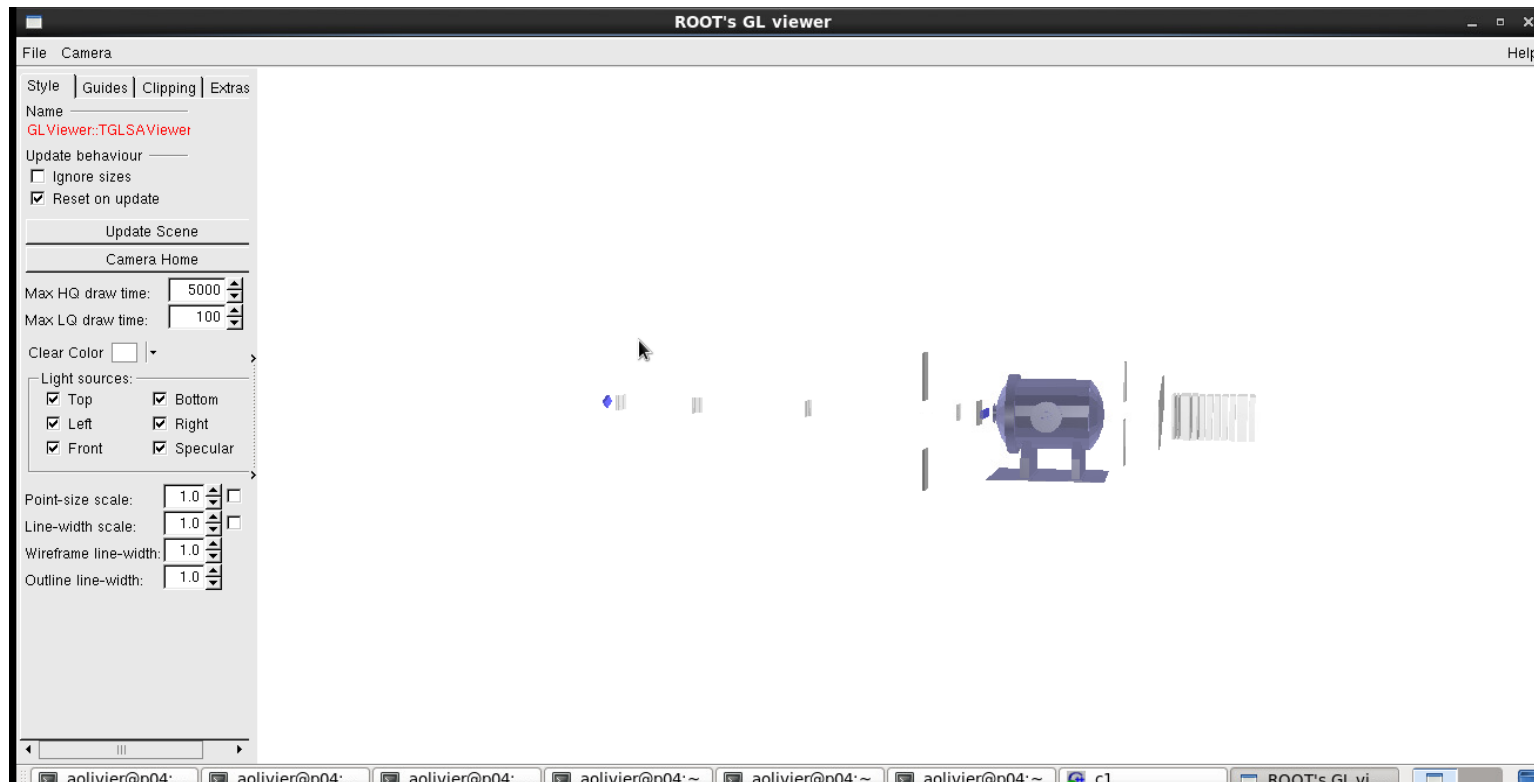
Added Features

- 3D view of LArIAT beamline
 - All auxiliary detectors in geometry file drawn as boxes with TPC
 - Displays information about detectors and sensitive volumes with waveforms
 - Names of detectors
 - Total charge in scintillators
 - Draws hit wires in wire chambers
 - Displays histogram of trigger waveforms/hits in separate tab
 - Should include all features from LArSoft's 3D TPC view
- Time Versus Wire View
 - Draws trajectories of MC particles in 2D
 - Draws lines at T_0 and $T_0 + \text{max drift time}$
 - Draws 2D projections of WCTracks on TPC planes (not working)

Using the Event Display

- Log in to a lariatgpvm machine
- `source /grid/fermiapp/lariat/setup_lariat.sh`
- `source /lariat/app/users/aolivier/larsoft_evd_debug/localProducts_larsoft_v04_16_00_debug_e7/setup`
- `source /lariat/app/users/aolivier/lariatEvd_v01_00_07/localProducts_larsoft_v04_09_00_e7_debug/setup`
- `setup lariatsoft v01_06_00 -q e7:debug`
- `lar -c evd_lariat<_sliced>.fcl <LArSoft file>`
- To start the beamline view, select AuxDet3D from the window menu
- You can close the time versus wire view once the OpenGL view in the AuxDet3D window can be rotated to speed up event processing
- See the end of `evd_lariat<_sliced>.fcl` for more options

The LArSoft Geometry File



- Includes all detectors in March 2015 survey
- Added USTOF and Halo detectors based on measurements with tape measure
- Should be compatible with LArSoft sensitive volume structure

Additional Work

- Event Display
 - 3D View
 - Zoom on trigger histogram limits what detector information is shown in beamline view: I plan to do this
 - Prevent ROOT error when beamline window is closed
 - Make labels as useful as possible
 - WC wire labels should include the wire number
 - Need labels for Cerenkov detectors (see below)
 - Convert TOF timestamps into micro seconds
 - Insert units for WCTrack momenta
 - Solve GL Invalid Value error when drawing TOF label with sliced data
 - Understand lack of drawn AuxDetDigits in sliced files
 - Time Versus Wire View
 - Determine whether the WCTrack projections are useful
 - Determine whether the T0 and T max lines are useful
 - General
 - Understand why menus do not work when original Time Versus Wire window has been closed
 - Make sure reconstruction drawing can be reconfigured from Edit menu
- Geometry: Add Cerenkov detectors
- Get LArSoft changes needed for event display add-ons into LArSoft develop version: these are not necessary if we do not want to add to the 2D display